
Preface

Oncogene-induced senescence is a multistep program triggered in response to aberrant oncoprotein expression and/or activation. The eventual function of this fail-safe mechanism is the suppression of the proliferation of cells at the preneoplastic stage ultimately resulting in the prevention of fully malignant progeny. On the other hand, senescent cells have been shown to promote cancer initiation and progression in several mouse models.

Since the discovery of oncogene-induced senescence in 1997 by Serrano et al., many outstanding researchers have been working on this intriguing set of phenotypes. In addition to proliferation arrest, cells undergoing oncogene-induced senescence have been initially characterized by changes in the activity of senescence-associated β -galactosidase, cell size, chromatin structure, histone modifications, DNA integrity, etc.

During the past two decades, new approaches for studying cellular processes underlying senescence-associated phenotypes have emerged leading to the identification of a number of genes that were implicated in the control and/or implementation of oncogene-induced senescence. And yet markers of senescence that can be universally applied to all experimental systems have not been identified and might not even exist. Conversely, there are virtually no markers that are specific only to the cells undergoing oncogene-induced senescence. Therefore, the analysis of phenotypes associated with oncogene-induced senescence requires multiple approaches. This book offers in a single volume a unique collection of the state-of-the-art experimental procedures utilized for the induction, detection, and modeling of this complex cellular program. The book encompasses protocols for studying oncogene-induced senescence in human specimens and a variety of experimental models including cultured mammalian cells, laboratory mice, and *Drosophila melanogaster*. It also offers a description of high-throughput approaches.

The book represents a useful asset for the wide audience of medical oncologists and researchers in the fields of oncology, molecular and cellular biology, biochemistry, and animal development. The chapters are organized to provide step-by-step guides for experimental procedures including the list of required reagents, equipment, and materials. Special attention is paid to the appropriate controls and troubleshooting.

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Buffalo, NY, USA

Mikhail A. Nikiforov

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